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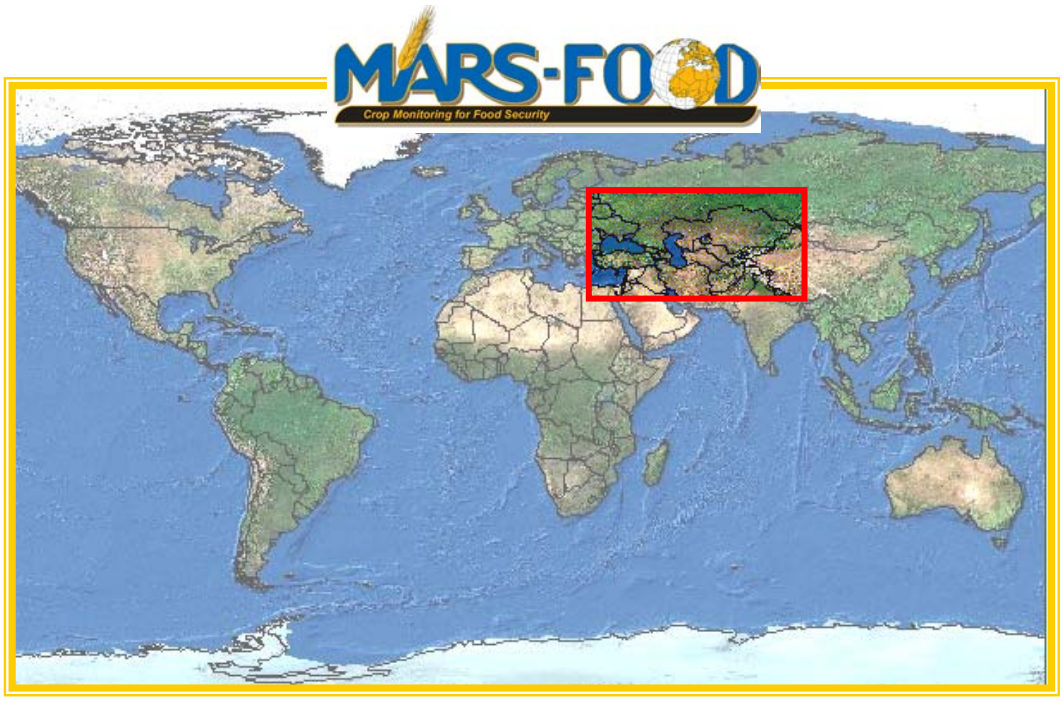
Agro-meteorological Bulletin for Russia and Central Asian Countries

Issue 5 (2007)
Winter crop sowing
Situation at the end of October 2007

MARS-FOOD Action
Institute for the Protection and Security of the Citizen



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Highlights Country by Country

	Russia	Agro-meteorological conditions during September-October 2007 were favourable for winter crop sowing, and better than in the previous year. The winter crop status at the end of October 2007 was better than in the previous year.
	Armenia	Agro-meteorological conditions during September-October 2007 were optimal for winter crop sowing, but worse than in the previous year. The winter crop status at the end of October 2007 was better than in the previous year.
	Azerbaijan	Agro-meteorological conditions during September-October 2007 were favourable for winter crop sowing, but worse than in the previous year. The winter crop status at the end of October 2007 was worse than in the previous year.
	Georgia	Agro-meteorological conditions during September-October 2007 were optimal for winter crop sowing, and slightly worse comparing with the previous year. The winter crop status at the end of October 2007 was close to the previous year.
	Kazakhstan	Agro-meteorological conditions during September-October 2007 were unfavourable for winter crop sowing, and worse than in the previous year. The winter crop status at the end of October 2007 was worse than in the previous year.
	Kyrgyzstan	Agro-meteorological conditions during September-October 2007 were unfavourable for winter crop sowing, and worse than in the previous year. The winter crop status at the end of October 2007 was worse than in the previous year.
	Tajikistan	Agro-meteorological conditions during September-October 2007 were unfavourable for winter crop sowing, and worse than in the previous year. The winter crop status at the end of October 2007 was worse than in the previous year.
	Turkmenistan	Agro-meteorological conditions during September-October 2007 were unfavourable for winter crop sowing due to insufficient moisture, and worse than in the previous year. At the end of October 2007 the winter crop was not sown yet.
	Uzbekistan	Agro-meteorological conditions during September-October 2007 were unfavourable for winter crop sowing, and worse than in the previous year. The winter crop status at the end of October 2007 was worse than in the previous year.
	Afghanistan	Agro-meteorological conditions during September-October 2007 were unfavourable for winter crop sowing, and worse than in the previous year. The winter crop status at the end of October 2007 was close to the previous year.
	Iran	Agro-meteorological conditions during September-October 2007 were favourable for winter crop sowing, but worse than in the previous year. At the end of October 2007 the winter crop was not sown yet.
	Iraq	Agro-meteorological conditions during September-October 2007 were unfavourable for winter crop sowing due to insufficient moisture, and worse than in the previous year. At the end of October 2007 the winter crop was not sown yet.
	Kuwait	Agro-meteorological conditions during September-October 2007 were unfavourable for winter crop sowing due to insufficient moisture, but better than in the previous year. At the end of October 2007 the winter crop was not sown yet.
	Northern India	Agro-meteorological conditions during September-October 2007 were favourable for winter crop sowing, and better than in the previous year. At the end of October 2007 the winter crop was not sown yet.
	Northern Nepal	Agro-meteorological conditions during September-October 2007 were unfavourable for winter crop sowing, and worse than in the previous year. The winter crop status at the end of October 2007 was worse than in the previous year.
	Northern Pakistan	Agro-meteorological conditions during September-October 2007 were favourable for winter crop sowing, and better than in the previous year. At the end of October 2007 the winter crop was not sown yet.
	Western China	Agro-meteorological conditions during September-October 2007 were unfavourable for winter crop sowing, and worse than in the previous year. The winter crop status at the end of October 2007 was close to the previous year.

Summary of the analysis

Meteorological conditions were favorable for winter crop sowing in Caucasus countries, northern Iran, Northern India, Northern Pakistan, and on the European part of Russia. The conditions were worse than in the previous year, but close to normal in other countries of the region.

Winter crop planting campaign was likely to be close to normal in the most countries. Only in Azerbaijan, and Northern Nepal it is likely to be in advance comparing with normal.

Analysis of crop growth indicators shows that winter crop status at the end of October 2007 was better than in the previous year in Russia and Armenia. The crop status is likely to be close to the previous year in Georgia, Afghanistan< and Western China. The situation in other countries of the region was worse comparing with the previous year.

In spite of the advanced winter crop sowing in Azerbaijan and Northern Nepal, winter crop status at the end of October was likely to be worse than in the previous year, which indicates worst situation with winter crop in these countries.

	winter crop	
	development stage	**crop status (comparing with previous season)**
Russia	**sowing-emergence**	+
Armenia	**sowing-emergence**	+
Azerbaijan	**sowing-emergence**	-
Georgia	**sowing-emergence**	=
Kazakhstan	**sowing-emergence**	-
Kyrgyzstan	**sowing-emergence**	-
Tajikistan	**sowing-emergence**	-
Turkmenistan	**before sowing**	
Uzbekistan	**sowing-emergence**	-
Afghanistan	**sowing-emergence**	=
Iraq	**before sowing**	
Iran	**before sowing**	
Kuwait	**before sowing**	
Northern India	**before sowing**	
Northern Nepal	**sowing-emergence**	-
Northern Pakistan	**before sowing**	
Western China	**sowing-emergence**	=

Meteorological Conditions

Meteorological conditions were optimal or favorable for winter crop sowing in Caucasus countries, northern Iran, Northern India, Northern Pakistan, and on the European part of Russia. Amount of precipitation was close to critical or below critical for winter crop sowing in Kazakhstan, Tajikistan, Turkmenistan, Uzbekistan, Afghanistan, Iraq, and Kuwait. Extreme air temperature was observed in Kazakhstan, Iraq, southern Iran, Tajikistan, Western China, and in the Siberian part of Russia. Heavy rains took place in Northern Nepal.

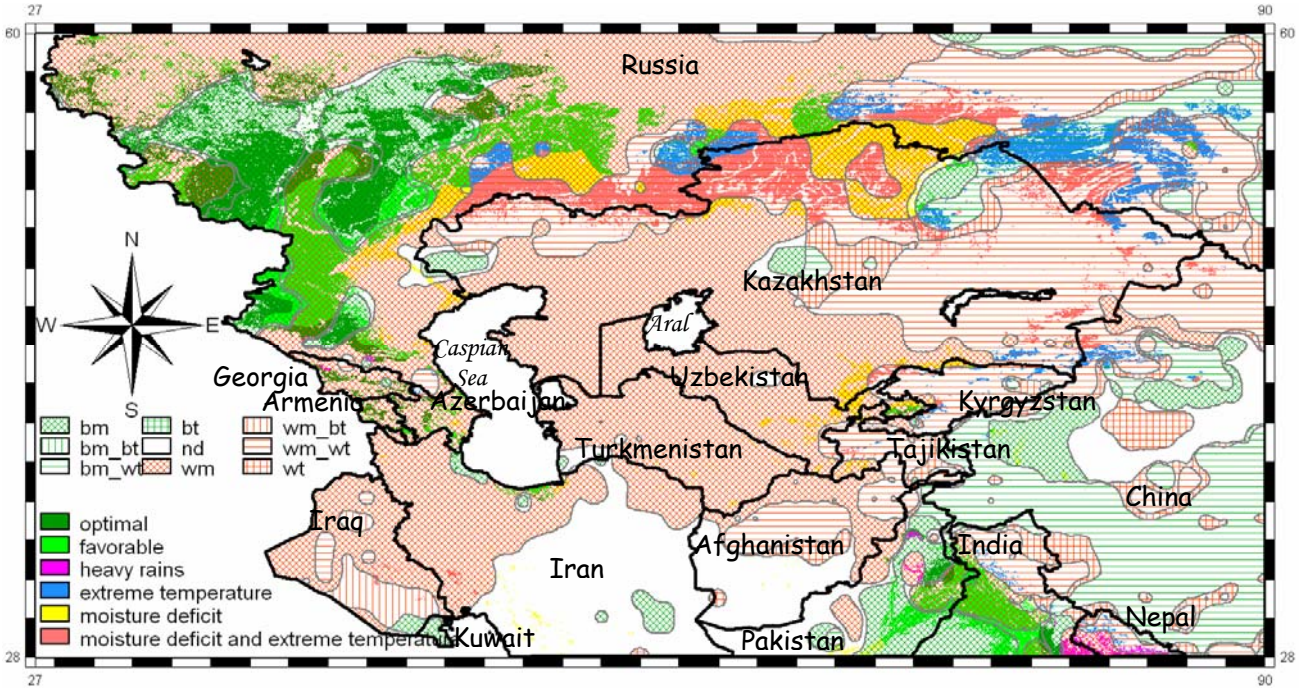
The meteorological situation in general was worse comparing with the previous year in many countries of the region. Only in Russia, Kuwait, Northern India, and Northern Pakistan the situation was better than in the previous year.

The results of the analysis are summarized in the Table. The colour of cells indicates the difference of meteorological conditions with the previous season (red – worse, green – better, and gray – the same).

Please, note that in some countries of the region winter crops were not started to growth at the end of October 2007 (see next pages).

meteorological conditions (September-October 2007)	comparing with previous year (colour)
Russia	**favourable**
Armenia	**optimal**
Azerbaijan	**favourable**
Georgia	**optimal**
Kazakhstan	**moisture deficit**
Kyrgyzstan	**extreme temperature**
Tajikistan	**moisture deficit**
Turkmenistan	**moisture deficit**
Uzbekistan	**moisture deficit**
Afghanistan	**moisture deficit**
Iraq	**moisture deficit**
Iran	**favourable**
Kuwait	**moisture deficit**
Northern India	**favourable**
Northern Nepal	**heavy rains**
Northern Pakistan	**favourable**
Western China	**extreme temperature**

Favourability of meteorological conditions during September-October 2007 for winter crop sowing (in colour):
colour on the map shows favourability and main limitations (see legend on the left)
Comparison with the conditions of previous year:
hatchings show units, where: **bt** *– better temperature regime;* **bm** *– better moisture regime;* **wt** *– worse temperature regime;* **wm** *– worse moisture regime;* **nd** *– no difference*



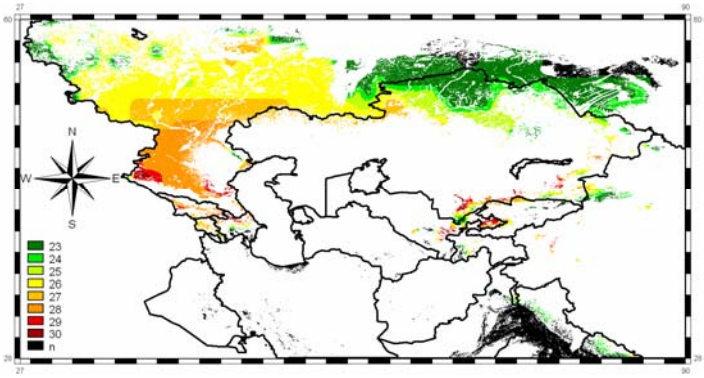
Crop growth simulation results

Meteorologically optimal winter crop planting date has been assessed using COP determinator. The results of assessment demonstrate that optimal planting date has been achieved during September-October 2007 in many countries of the region (see the map below). Only in Turkmenistan, Iraq, Iran, Kuwait, Northern India, and Northern Pakistan winter crop planting is not started yet. In general, planting campaign was likely to be close to normal in the most countries. Only in Azerbaijan, and Northern Nepal it is likely to be in advance comparing with normal.

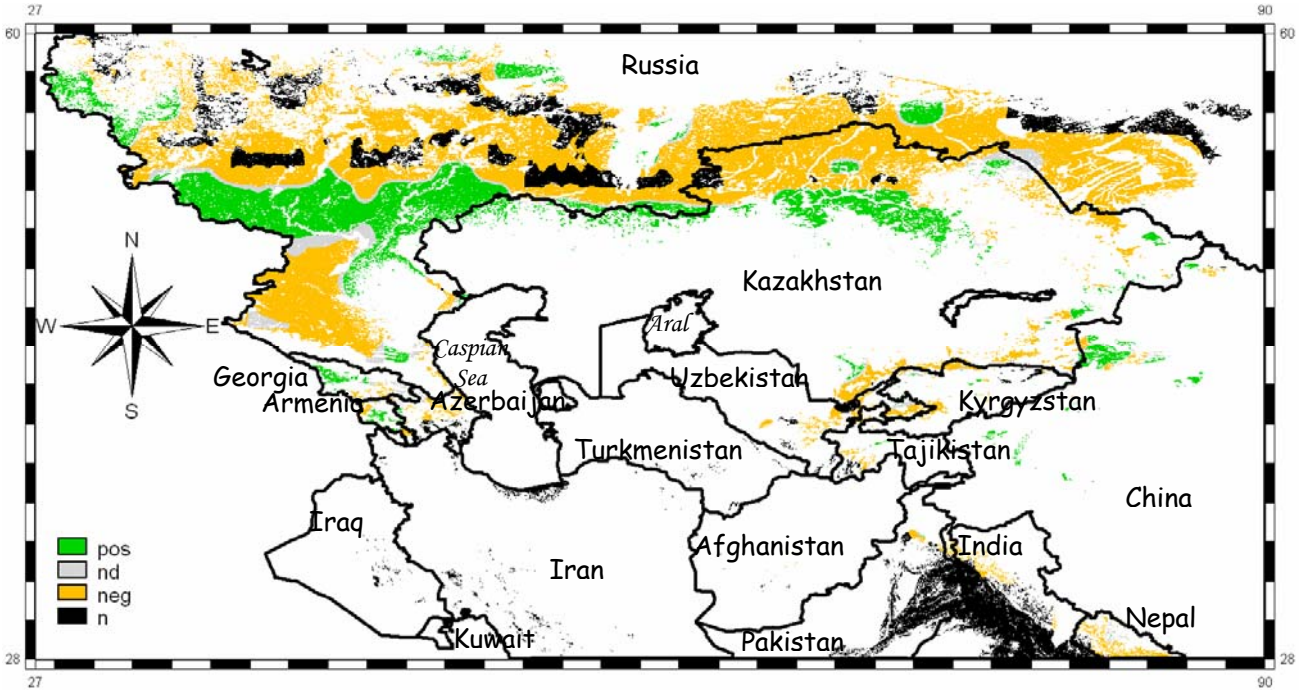
Based on the results of winter crop growth simulation using CGMS model it seems possible to conclude that winter wheat status at the end of October 2007 was better than in the previous year in Armenia, Western China, and in the Chernozemic and Western regions of Russia. The crop biomass accumulated up to the end of October 2007 was close to the previous year in Georgia, and Afghanistan, and was lower than in the previous year in other countries of the region. The negative difference in crop biomass accumulation can be explained by some delay in crop sowing or by the worse meteorological conditions in the current year comparing with the previous year.

crop status at the end of October 2007	comparing with previous year
Russia	=
Armenia	+
Azerbaijan	-
Georgia	=
Kazakhstan	-
Kyrgyzstan	-
Tajikistan	-
Turkmenistan	
Uzbekistan	-
Afghanistan	=
Iraq	
Iran	
Kuwait	
Northern India	
Northern Nepal	-
Northern Pakistan	
Western China	+

Winter wheat planting dekad (results of COP simulation)



Difference of water limited total biomass of winter wheat between 2007 and 2006 (status at the end of October) (in colour) (results of the CGMS modelling)
pos – *positive difference;* **neg** – *negative difference;*
nd – *no difference;* **n** – *no growing crop or no data*



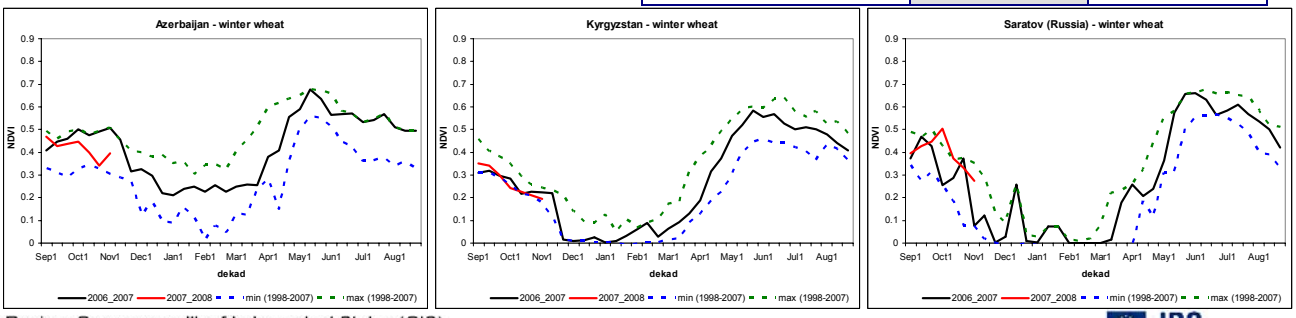
Remote Sensing Indicators

Remote sensing indicators were applied only for the countries where winter crops during the period under analysis were at the development stage after emergence. Thus, for Turkmenistan, Iraq, Iran, Kuwait, Northern India, and Northern Pakistan the analysis of remote sensing indicators was not conducted.

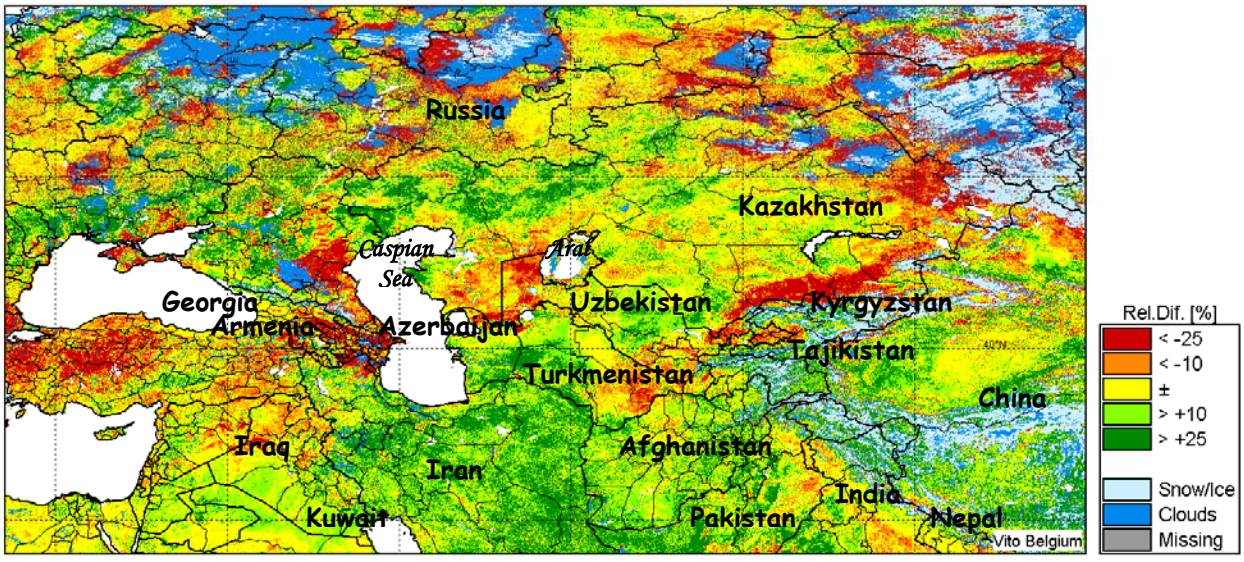
Based on the analysis of the NDVI behaviour it is possible to conclude that at the end of October for the main winter crop cultivating regions of Russia in general the status is better than in the previous year. The NDVI curves show that the winter crops status at the end of October 2007 was close to the previous year in all countries except Azerbaijan, Kazakhstan, and Uzbekistan were it was worse than in the previous year.

The results of the analysis are summarized in the Table. The figures indicate year-analogue for the NDVI time profile. The colour of cells indicates the difference of the indicator with the previous season (red – worse, green – better, and gray – the same).

Remote sensing indicators of winter crop status	comparing with previous year	year - analogue
Russia	+	?
Armenia	=	?
Azerbaijan	-	1998/1999
Georgia	=	1999/2000
Kazakhstan	-	?
Kyrgyzstan	=	2001/2002
Tajikistan	=	2006/2007
Turkmenistan		
Uzbekistan	-	2000/2001
Afghanistan	=	1999/2000
Iraq		
Iran		
Kuwait		
Northern India		
Northern Nepal	=	2003/2004
Northern Pakistan		
Western China	=	2006/2007



Region: Commonwealth of Independent States (CIS)
Period: Oktober, 2007, Dekad 3/3
Theme: Normalized Difference Vegetation Index (NDVI)
Relative difference w.r.t. previous year: 100% x (Act. - Prev.)/Prev.
Source: SPOT-VEGETATION

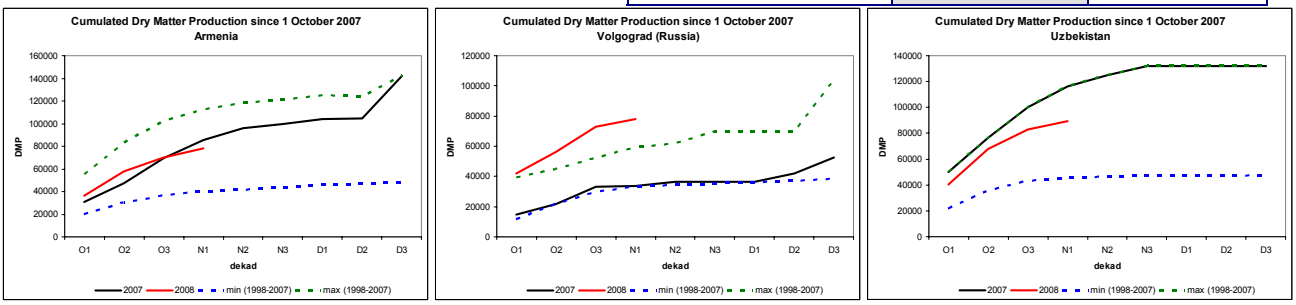


Dry Matter Production modelling

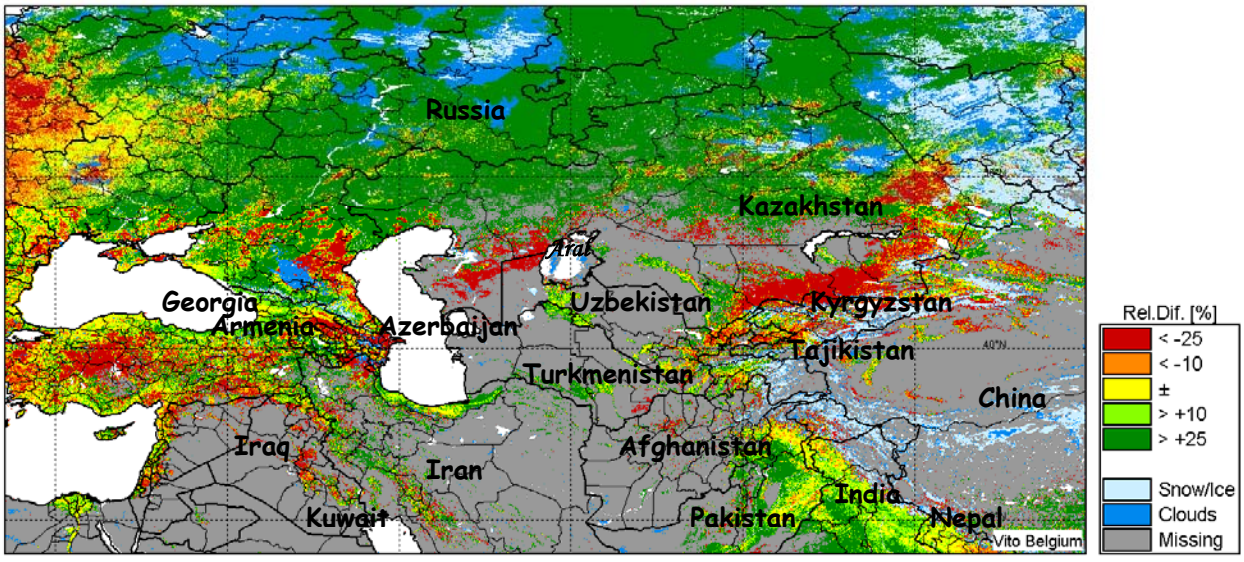
Dry Matter Production (DMP) modelling were analyzed only for the countries where winter crops during the period under analysis were at the development stage after emergence. Thus, for Turkmenistan, Iraq, Iran, Kuwait, Northern India, and Northern Pakistan the analysis was not conducted.
The analysis of DMP modelling results demonstrates in general worse situation in the current season comparing with the previous season. The situation is better than in the previous season only in Russia. The situation in Armenia, Georgia, Tajikistan, Northern Nepal, and Western China is likely to be close to the previous season. The situation with DMP was worse than in the previous year in Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan, and Afghanistan.

The results of the analysis are summarized in the Table. The figures indicate year-analogue for the DMP accumulation. The colour of cells indicates the difference of the indicator with the previous season (red – worse, green – better, and gray – the same).

Cumulated since 1 October 2007 Dry Matter Production	comparing with previous season	year - analogue
Russia	+	?
Armenia	=	1998/1999
Azerbaijan	-	1998/1999
Georgia	=	1999/2000
Kazakhstan	-	?
Kyrgyzstan	-	2003/2004
Tajikistan	=	2006/2007
Turkmenistan		
Uzbekistan	-	2003/2004
Afghanistan	-	2003/2004
Iraq		
Iran		
Kuwait		
Northern India		
Northern Nepal	=	?
Northern Pakistan		
Western China	=	1999/2000



Region: Commonwealth of Independent States (CIS)
Period: Oktober, 2007, Dekad 3/3
Theme: Cumulative DMP over Growing Season (Oct.1 - present)
Relative difference w.r.t. previous year: 100% x (Act. - Prev.)/Prev.
Source: SPOT-VEGETATION



Background Information

The present Bulletin is dedicated to the analysis of the agro-meteorological situation in Russia and Central Asian countries during the period from the beginning of September to the end of October 2007, and to the analysis of winter crop sowing campaign.

Crops

This is the time for winter crop sowing and emergence in most countries of the region. Summer crops were harvested already practically in all countries.

Wheat and barley are the main crops cultivated during the winter period in most countries of the region. Additionally, sugar cane and rapeseed are cultivated in winter in Northern India, Northern Pakistan, Western China and Northern Nepal, as well as potatoes and fodder crops in Afghanistan, and rice in Northern India. In many countries of the region, more than 90% of wheat and barley are cultivated as winter crops. However, more than 90% of wheat and barley in Kazakhstan, near 70% of wheat and more than 90% of barley in Russia are spring crops. Near 90% of barley in Armenia and Kyrgyzstan, near 40% of wheat in Kyrgyzstan, more than 60% of barley in Tajikistan, and near 40% of barley in Georgia cultivated in summer too.

Practically all winter crops in Russia and Kazakhstan are cultivated in rain-fed conditions. In Tajikistan, Uzbekistan, Georgia and Armenia near 30% of winter crops are irrigated. In Kyrgyzstan, Azerbaijan, Iran, Iraq and Afghanistan near 40-70% of winter crops are cultivated in irrigated conditions. In addition, in Turkmenistan, Kuwait, Northern India, Northern Pakistan, Western China and Northern Nepal practically all winter crops are irrigated.

country	*Production and Yield of wheat , 2006 (FAOSTAT, 15.09.07)*	
	yield (t/ha)	**production (1000 t)**
Russia	**2,0**	**45006,0**
Armenia	**2,0**	**258,0**
Azerbaijan	**2,6**	**1460,0**
Georgia	**1,7**	**160,0**
Kazakhstan	**1,1**	**13500,0**
Kyrgyzstan	**2,1**	**928,0**
Tajikistan	**1,8**	**571,0**
Turkmenistan	**3,1**	**2834,0**
Uzbekistan	**4,1**	**5996,3**
Afghanistan	**1,8**	**4,265,0**
Iraq	**0,9**	**2228,0**
Iran	**2,4**	**14500,0**
Kuwait	**2,1**	**0,6**
India	**2,6**	**69350,0**
Nepal	**2,1**	**1394,1**
Pakistan	**2,5**	**21276,9**
China	**4,3**	**97445,3**

Green colour indicates figures, which are higher than normal and red colour indicates figures, which are lower than normal.

The agro-meteorological situation during the period of analysis is compared with the situation at the similar period of the previous season, and with long-term average data.

The background information is given in the following table.

Methods

The agro-meteorological situation during the period of analysis is compared with the situation during the previous season, and with long-term average data. The monitoring of the agro-meteorological situation is based on the analysis of the following dekadal data: minimal, maximal and average air temperature, sums of precipitation and global radiation, dekadal values of the climatic water balance, and maps of the Normalized Difference Vegetation Indexes (NDVI). The crop growth simulation was conducted using the CGMS model. Optimal sowing dates were assessed using COP determinator (Savin et al., 2007). Meteorological data are derived from the outputs of the numerical meteorological model from ECMWF (UK), and were prepared for analysis by METEOCONSULT (NL). SPOT-VEGETATION data were used as a basis for calculation of the remote sensing indicators of crop growth. Data were pre-processed by VITO (BE). Dekadal maximal NDVI values were weighted for pixels, where crops are cultivated, for each country of the region. Weighted NDVI values were used as an indicator of crop status. Dry Matter Production maps were calculated by VITO based on SPOT-VEGETATION data and information about global radiation, applying the Monteith approach.

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Abstract

The Bulletin is dedicated to the analysis of the agro-meteorological situation for winter crop in Russia and Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, Georgia, Armenia, Azerbaijan, Iraq, Iran, Kuwait, Afghanistan, Northern Pakistan, Northern India, and Western China) during the period from the beginning of September to the end of October 2007. The monitoring of the agro-meteorological situation is based on the analysis of the dekadal meteorological data, CGMS crop growth simulation results, and maps of the Normalized Difference Vegetation Indexes. The first pages contain the main results of the analysis. The following pages are dedicated to the analysis of separate indicators of crop growth.

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